tinual observation of the motions of the heart and blood vessels in living animals, and this epoch-making discovery is always wrongly attributed by anti-vivisectionists to the observation of the valves of the veins, though it must be clear that in that case they would have suggested to Fabricius, their observer, the real meaning of their presence and structure.

Sir Charles Bell, who has been quoted with wearisome reiteration to disparage experiments on living animals, and to exaggerate the exclusive importance of anatomical investigation, not only contradicted himself, but earned his scientific reputation by those experiments on living animals which he later condemned, and when he adhered strictly to "the just views taken from the study of anatomy" he fell into the greatest error which ever misled an eminent man. Two hundred years after Harvey had settled the question of the circulation of the blood for ever, Sir C. Bell, confusing himself with a syringe and a dead body, and unable to allow for the difference between it and a living one, came to the conclusion that the heart had little to do with the circulation of the blood, and adopted Galen's error that the principal force was the attraction of the vessels for the blood, and maintained that the law of gravity was abolished in living animals, but that Providence re-introduced it temporarily (!) for the arrest of hæmorrhage whenever an animal sustained a trifling wound.

Consistent in whole-hearted devotion to their own views, the anti-vivisectionists have misrepresented the lessons of the past and opposed every step of progress in medical knowledge in our own time. They profess to believe that every stage of progress in medicine has been effected, and always must be, by clinical work alone. Yet it is perfectly obvious that from classical times clinical investigation at Alexandria and Cordova and many other places enjoyed as great opportunities as could be desired, yet, until the opening of the renaissance of experimental method with Harvey about 1400 years later, medical knowledge had scarcely moved, for it is impossible to say that the physicians who mobbed Charles the Second to death, and who presumably represented the best talent of that time in England, and Dr. Guy Patin, Dean of the Faculty of Medicine in Paris, an eminent physician of about the same period, who maintained that all medical knowledge was summed up in senna and the lancet, had more real knowledge of physiology and the meaning of symptoms than Galen. And in modern times, when more progress in the knowledge of the causes and nature of disease has been acquired in a few years than in as many centuries formerly, every step of progress which has been obtained by physical science has been opposed by the anti-vivisectionists. Antiseptic surgery, which has brought more immediate relief from pain and death than any single discovery in the history of the human race, the whole science of bacteriology, with the light which has been thrown on tuberculosis, cholera, diphtheria, yellow fever and malaria, and the mysteries of infection and immunity, improvements in the operations of surgery, and the great names of Pasteur, Koch, and Lister, each and all have been assailed by the anti-vivisectionists with every species of abuse and disparagement.

Indeed, the denials or at best the grudging admission of the advances made in recent years in medicine and surgery would suggest that to the anti-vivisectionist they are actually unwelcome, as justifying the very researches which they attack.

It is a commonplace with Mr. Coleridge and his friends that they are actuated by the highest of all motives—love and humanity. The commonplace has been so reiterated that among the public it is taken as a matter of course, and even the Lord Chief Justice would appear to have regarded science and humanity as necessarily to be found in opposing camps. Let us see how far this claim of theirs will bear investigation.

If Mr. Coleridge and his friends were, indeed, the lovers of men and animals they declare themselves to be, no body of individuals in the kingdom would be less ready to receive or believe in stories of cruelties in others which would be incomprehensible and impossible in themselves. They would put them to the strictest tests, only accept them on the clearest proof, and rejoice unfeignedly were such proof not forthcoming.

But what really happened? A scientific man is accused of barbarities which would sicken a savage The eye-witnesses repeatedly observe in silence tortures which a word would have ended, nay, they even withhold that word because it would have ended them, and yet Mr. Coleridge actually accepts this tale. He adopts it, he declares he has used every possible means to verify its truth, and he gives out this slander to the world, though he might easily have learned that these sufferings were inventions, and that the tortures of the defenceless creatures in whom he professed so deep an interest had never occurred at all. Is this humanity? Is this love, the love that thinketh no evil, or is it the wounded *amour propre* of one who has been worsted many times, whose statements have been refuted over and over again?

It is difficult to understand the secret of the paradoxes we are called upon to reconcile—philanthropists ascribing the basest actions to their fellow men, humanitarians diverting funds from hospitals, moralists supporting calumny by falsehood. The high motives which are claimed should exist, but until those claims rest upon some better foundation than asseverations contradicted by facts, we shall continue (and we should advise all others who are seriously considering this question to continue) to discount them altogether.

NYASALAND.[1]

MR. DUFF has written a very charming and illuminative book on Nyasaland, otherwise known as the British Central Africa Protectorate, where, since the beginning of 1898, he has resided as an official. His acquaintance with the little protectorate of 43,000 square miles was mainly limited to the Shire Province and the west coast of Lake Nyasa, but Mr. Duff is made of the same stuff as the late Prof. Henry Drummond—he is able to take in many salient points at a glance and to see things which do not strike the ordinary traveller or resident. (Whatever may be thought of Henry Drummond's later writings by scientific men, no scientific man acquainted with Africa can fail to regard his little work on Central Africa as one of the most remarkable contributions to the literature of the Dark Continent which has ever been published.)

Mr. Duff's work is illustrated by a few well chosen photographs and several of his own drawings, most of which are excellent, but one or two, perhaps, too sketchy and vague to consort with the general accuracy of the book. There are useful appendices, a sketch-map of the protectorate, and a good index.

The portions of the book which will most appeal to the readers of NATURE are those dealing with the flora, fauna, and human inhabitants, and these subjects occupy more than half of the book.

"If it be spring," writes the author, "the display of flowers will attract the attention of the most indifferent, blooms of every shape and hue being then abundant, from the great clusters of petals adorning certain papilionaceous trees down to the less conspicuous but equally beautiful ground flowers and

[1] "Nyasaland under the Foreign Office." By H. L. Duff (B.C.A.Admn.) Pp. xv + 422. (London: George Bell and Sons, 1903.) Price 12s. net.

creepers. Except, indeed, in the matter of tree-orchids, which are not very well represented, the flowers of Nyasaland are scarcely surpassed either in respect of variety or brilliancy by those of any other part of the world. It is true that, except here and there in the hills, they do not often grow so close together as to present unbroken masses of colour; and therefore the estimate which any particular person may form of them, as a whole, depends to some extent on his powers of observation. Still, short of always travelling in a machilla and always falling asleep in it, there is no possibility of overlooking them entirely. Ground-orchids flourish almost everywhere. Among lilies we have the Crinum, with its long, heavy, pure white blossoms; and a most effective little tiger-lily of bright gold and deep cardinal red; also a tree-lily (Vellozia), so wonderfully beautiful that, as Sir Harry Johnston says, 'even the botanists of Kew were touched, and called it *splendens*.' Then mauve irises spring up in countless thousands during the rains, and pink and crimson gladioli, and pale yellow marguerites, hibiscuses too, anemones, gentians, flowering beans—hundreds of plants, too, whose names are unknown to me, and many others perhaps which have escaped classification at the hands of the very few scientific botanists who have exploited the flora of the country."

The author is incorrect in some of his guesses as to the names of plants and trees. On pp. 111 and 112 the "euphorbiaceous" plant or tree to which he refers is none other than a common form of Dracæna or tree-lily, used throughout many parts of tropical Africa for hedges or enclosures.

The author has many interesting notes and original observations on the fauna. He shows that, contrary to the belief of such authorities as Sir Alfred Sharpe and Sir Harry Johnston, the roan antelope does apparently still exist in parts of the Shire Province. It has been generally supposed that this antelope confined its range within this protectorate to the regions west and north-east of Lake Nyasa, and did not intermingle, so to speak, with the area of its near ally, the sable antelope. Mr. Duff, however, shows that the roan antelope has been shot in the Shire Highlands. He alludes several times to rumours of the striped hyæna existing within the limits of the protectorate. We are, as a matter of fact, very ignorant yet as to the exact number of species or varieties of the hyæna genus existing in Africa, and the limits of the range of each species or variety. The actual range of the true striped hyæna is, of course, northern as compared to the existing southern range of the spotted hyæna. The striped hyæna is the only species of this group which at the present day is found beyond the geographical limits of Africa, its range extending through Syria, parts of Asia Minor and Arabia (? southern Persia) into Baluchistan and India. How far it penetrates into equatorial Africa is not accurately determined at the present time by indisputable evidence. It certainly reaches the Gambia River in West Africa. It is found in Abyssinia and some of the Nile countries, and in Somaliland. It has been *reported* to exist on the slopes of Kilimanjaro, and as far south as Unyamwezi, and also to be found in the eastern part of the Uganda Protectorate; but inasmuch as that curious creature the aard wolf (Proteles) very closely (in the eyes of the natives) resembles a dwarfed form of striped hyæna, and as the aard wolf is found at intervals throughout the whole eastern half of Africa from Cape Colony to Abyssinia, it is possible that some of the stories of striped hyænas existing in British Central Africa, German and British East Africa may refer only to the aard wolf. The brown

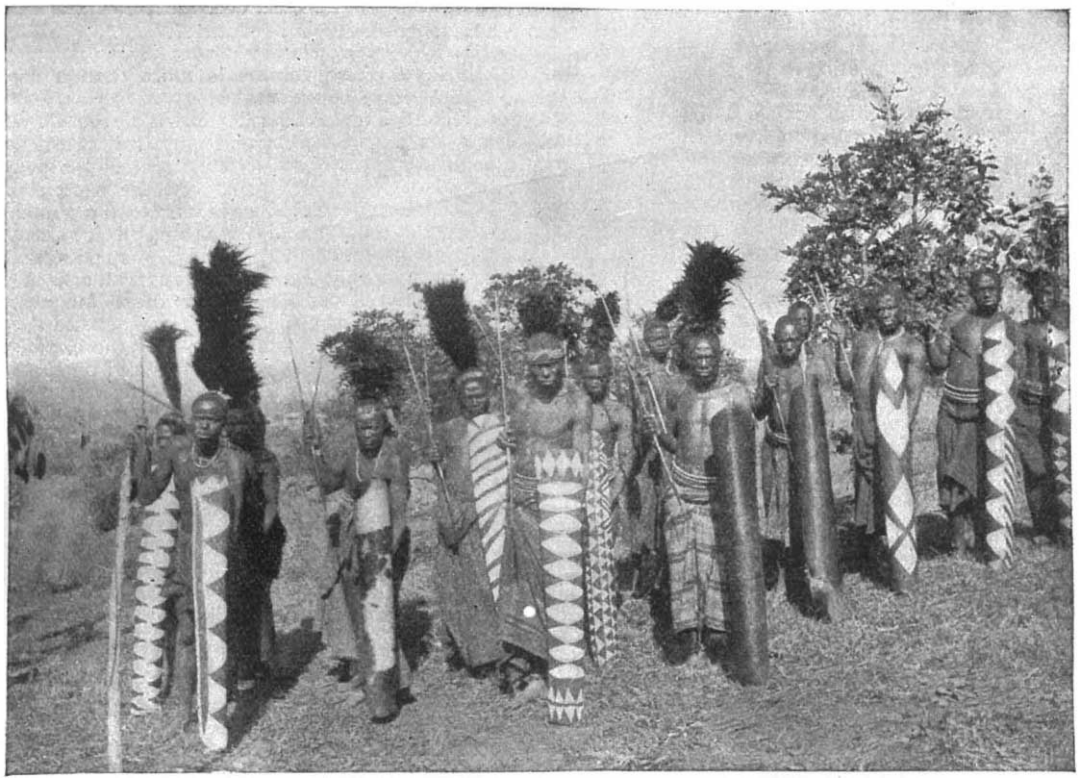

FIG. 1.—Wankonde of North Nyasa. From 'Nyasaland," by H. L. Duff.

hyæna, a distinct form, but one nearly related to the striped, also ranges, as a very scarce animal, from Natal in the south to equatorial East Africa in the north, and may possibly be found here and there within the limits of the British Central Africa Protectorate. The black and white monkey to which the author refers is obviously the Colobus, and not the Mangabey, which ape is nowhere found within the limits of British Central Africa, but is a form confined to the West African fauna, though it reaches as far as the western limits of the Uganda Protectorate.

The author gives a charming and accurate description of one of the Galago lemurs which are so common in this part of Africa. The writer of this review is convinced that the intelligence—the almost Simian intelligence—of most of the lemurs has been greatly underrated, as also their human characteristics, such as their ability (specially marked in the Galagos) of running on the hind feet and using the hands to box with. A Galago surprised and at bay puts his large fists almost into the positions of a human boxer. Of this interesting animal the author writes:—

"This lemur is a charming little thing to look at, with its soft bluish-grey fur, and large, solemn, perfectly circular eyes. It also makes a most engaging pet. I knew one which used to live half wild in the roof of a verandah at Zomba, coming and going without let or hindrance. In disposition he was on the whole very sociable, but inclined at the same time to be somewhat overburdened with a sense of his own dignity. At any rate, it was very easy to offend him; and when this happened he would retire to his coign of vantage in the roof, which nothing would then induce him to quit. At other times he would come out readily when called by his native name of "Changa." Five-o'clock tea was his favourite meal, and he rarely missed it, being accustomed about that time to refresh himself with a saucer of milk, which he drank with elaborate daintiness. His curiosity was infinite, and sometimes overcame his natural good breeding; but lapses of this kind often brought their punishment, as once, when he thrust his head unbidden into a small coffee cup and could not withdraw it. The sight of him thus unexpectedly bonneted I remember to this day. Though a certain sedateness marked his normal bearing, he possessed a truly wonderful reserve fund of activity, and could climb anything and jump anywhere when the humour took him. Moreover, he had a knack of alighting after the most prodigious leap almost as gently as a bird. I have known him to drop suddenly from a high curtain pole on to the edge of a tea tray without upsetting a single cup; but then of course he was a very small animal—smaller in fact than he looked, owing to his thick, fluffy coat."

There are interesting notes on pp. 85, 86, on the fish of Lake Nyasa, in which justice is done to the wonderful colours of the "blue perch."

On p. 124 an excellent description is given of the weird noises in the African bush at night time. The author also is wise enough to illustrate the monotony and stillness of the African landscape in day time and under normal conditions. He discourses on the singular beauties of the flora and the marvellous interest in the fauna, but brings home to his readers that every aspect in all seasons and under all conditions of Central Africa is not wonderful or beautiful or terrifying. Rather, perhaps, have many of these beauties and wonders to be sought for; they are not immediately patent to the eye of the untrained observer.

He still considers that as a game country Nyasaland may almost vie with any other part of tropical Africa where game is varied and abundant, and attributes the fact that no species in the splendid fauna is yet on the verge of extinction to the Game Laws, which have been in existence now for something like eight years, and which the Foreign Office has steadily enforced.

His chapters on the native races are admirable. He has evidently made himself well acquainted with the Chinyanja tongue, and through the medium of this widespread language has been able to get into touch with the natives of the Protectorate, thus collecting much new and valuable information regarding the manners, customs, traditions, beliefs, &c. To their amiable qualities he is fully alive, as also to their weaknesses and simple vices.

The remarks of the author regarding the labour question are well worthy of attention, but are not suited for discussion in the pages of this Journal. The same remark applies to his excellent chapter on the work of the missionaries, which is critical but appreciative.

THE CANADIAN ROCKY MOUNTAINS.[1]

THIS attractive volume is more than a record of mountain climbing. It gives the reader a very good idea of a considerable area of the Great Lone Land, its fine scenery and physical characteristics, introducing him to not a few "untrodden peaks and unfrequented valleys." Between the eastern base of the Canadian Rocky Mountains and the Pacific shore the earth's crust has been crumpled into a zone of parallel folds more than 500 miles in breadth, which have been deeply sculptured by meteoric agencies. South of the American border these mountains are distinguishable into the Rockies proper and the Sierra Nevada, parted one from another by the broad plateau of Utah, the latter chain being flanked on the west by the Coast Range. In Canada the three are practically fused together, the peaks running in successive ranges, almost like waves of the sea. Messrs. Stutfield and Collie selected as their field of work the region on both sides and immediately west of the continental watershed to the north of Hector Pass—that traversed by the Canadian Pacific Railway. This region, so far as they saw, consists entirely of sedimentary rocks—limestone, sometimes dolomitic, with shales or slates. It is, as mountaineers will see from the illustration which we reproduce, not unlike the Western Oberland, between the Blumlis Alp and the Diablerets, greatly enlarged laterally but not vertically, the higher peaks ranging commonly from about 10,500 to rather under 12,000 feet. The mountains, in fact, were less lofty than the authors had anticipated. One of their few predecessors had, indeed, reported the existence, some dozen leagues north of the railway, of two Alpine giants, Mount Brown and Mount Hooker, rising on either side of a pass, the one to an elevation of 16,000 feet, the other only 300 feet lower, and asserted that he had scaled the former. As, however, this indicated an ascent of about 9000 feet in little more than half an early summer's day, experts were sceptical; the more so when Prof. Coleman, of Toronto, ten years ago found a mountain only just more than 9000 feet high where Mount Brown should be. These giants, in the course of the explorers' four journeys, were proved to be as great impostors as the Mont Iseran and Aiguille de la Vanoise of the Graian Alps some half-century ago.

Travel in the Canadian Rockies is anything but easy work. Wood and water are the only necessaries which the country can be trusted to supply. Indians are few, and game is generally scarce, so that a loss

[1] "Climbs and Explorations in the Canadian Rockies." By Hugh E. M. Stutfield and J. Norman Collie, F R.S. Pp. xii+343; with maps and illustrations. (London: Longmans, Green and Co., 1903.) Price 12s. 6d. net.